


5.00 credits	30.0 h + 15.0 h	Q2
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Teacher(s)	Contino Francesco ;Jeanmart Hervé ;
Language :	English
Place of the course	Louvain-la-Neuve
Main themes	<ul style="list-style-type: none"> • World energy outlook • Energy systems • Energy technologies • Environmental, economic, societal, ethical aspects of energy
Learning outcomes	<p>At the end of this learning unit, the student is able to :</p> <p>Contribution of the course to the program objectives (N°)</p> <ul style="list-style-type: none"> • AA1.1, AA1.3 • AA3.1, AA3.3 • AA5.2, AA5.3, AA.5.4, AA.5.5, AA5.6 • AA6.1, AA6.2, AA.6.3 <p>Specific learning outcomes of the course</p> <p>1</p> <ul style="list-style-type: none"> • Memorize the main orders of magnitude and units in the field of energy • Identify and understand the main parameters required to characterize the performance, in terms of technical, environmental, economic, societal, and ethical aspects, of energy systems and technologies • Examine the literature on a topic related to energy • Question and weigh different opinions on energy topics • Defend in a written document and/or in a presentation your analysis (technical, environmental, economic, societal, and ethical) on an energy topic
Evaluation methods	a report on one of the topics covered. Instructions for the report will be given in the first lesson.
Teaching methods	<p>Suggested teaching approach</p> <ul style="list-style-type: none"> • Seminars given by internal/external experts on different topics related to energy • Briefings and/or Debriefings of the seminars based on selected readings
Content	<p>Non-exhaustive list of possible topics for the seminars</p> <ul style="list-style-type: none"> • Link between energy-economy • Philosophical roots of the energy/ecological crisis • Focus over the energy situation in Africa • AP1000 reactor and passive safety systems • Perception of energy needs • Nuclear fusion • Energy in buildings • Low carbon Belgium in 2050 • Nuclear wastes • Generation 4 nuclear reactors • Combined heat and power (CHP) and district heating • Visit of gas-steam combined power cycle • Visit of nuclear installations (SCK•CEN, Belgoprocess) • Visit of the CHP of Louvain la Neuve • Materials for the energy transition
Bibliography	<ul style="list-style-type: none"> • Selected papers and documents related to the topics of the seminars
Faculty or entity in charge	ELME

Programmes containing this learning unit (UE)				
Program title	Acronym	Credits	Prerequisite	Learning outcomes
Master [120] in Mechanical Engineering	MECA2M	5		
Master [120] in Electro-mechanical Engineering	ELME2M	5		